

H1152

0054601

Eberline Services
W.O. No. R0-11-166-7576

Bechtel Hanford Inc.
SDG H1152

Case Narrative

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1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1152 was composed of two other solid samples designated under SAF No. B99-029 with a Project Designation of: 100-HR-4 Pump & Treat-Resin Sampling.

The samples were received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on January 5, 2001.

2.0 ANALYSIS NOTES

2.1 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses

2.2 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.3 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

2.4 Tritium Analyses

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

Melissa C. Mannion
Melissa C. Mannion
Program Manager

01/05/01
Date

RECEIVED
MAR 28 2001
EDMC

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1152

SDG 7576
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1152

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B10V60	100-KR-4	SOLID		R011166-01	B99-029	B99-029-62	11/20/00 09:05
B10V61	100-KR-4	SOLID		R011166-02	B99-029	B99-029-62	11/20/00 09:20
Method Blank		SOLID		R011166-04	B99-029		
Lab Control Sample		SOLID		R011166-03	B99-029		
Duplicate (R011166-02)	100-KR-4	SOLID		R011166-05	B99-029		11/20/00 09:20

SAMPLE SUMMARY

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 01/05/01

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1152

QC SUMMARY

SDG 7576
 Contact Melissa C. Mannion

Client Hanford
 Contract TRC-SBB-207925
 Case no SDG H1152

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7576	B99-029-62	B10V60	SOLID	100.0			11/22/00	2	R011166-01	7576-001
		B10V61	SOLID	100.0			11/22/00	2	R011166-02	7576-002
		Method Blank	SOLID						R011166-04	7576-004
		Lab Control Sample	SOLID						R011166-03	7576-003
		Duplicate (R011166-02)	SOLID	100.0			11/22/00	2	R011166-05	7576-005

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1152

SDG 7576
 Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
 Contract TRC-SBB-207925
 Case no SDG H1152

TEST	MATRIX	METHOD	PREPARATION ERROR		PLANCHETS ANALYZED				QUALI-			
			BATCH	2σ %	CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	FIERS
Alpha Spectroscopy												
U	SOLID	Uranium, Isotopic in Soil	6962-148	5.0	2			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	6962-148	10.0	2			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	6962-148	10.0	2			1	1	1/1		
Liquid Scintillation Counting												
H	SOLID	Tritium in Soil	6962-148	10.0	2			1	1	1/1		

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.
 Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

PREP BATCH SUMMARY

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TMA/RICHMOND
SAMPLE DELIVERY GROUP H1152

WORK SUMMARY

SDG 7576
 Contact Melissa C. Mannion

Client Hanford
 Contract TRC-SBB-207925
 Case no SDG H1152

CLIENT SAMPLE ID		LAB SAMPLE ID								
LOCATION		COLLECTED				SUF-				
CUSTODY	SAF No	RECEIVED	PLANCHET	TEST	FIX	ANALYZED	REVIEWED	BY	METHOD	
B10V60		R011166-01	7576-001	H		12/23/00	01/05/01	MCM	Tritium in Soil	
100-KR-4		11/20/00	7576-001	SR		12/14/00	01/05/01	MCM	Total Strontium in Soil	
B99-029-62	B99-029	11/22/00	7576-001	TC		12/29/00	01/05/01	MCM	Technetium 99 in Soil	
			7576-001	U		12/22/00	01/05/01	MCM	Uranium, Isotopic in Soil	
B10V61		R011166-02	7576-002	H		12/23/00	01/05/01	MCM	Tritium in Soil	
100-KR-4		11/20/00	7576-002	SR		12/14/00	01/05/01	MCM	Total Strontium in Soil	
B99-029-62	B99-029	11/22/00	7576-002	TC		01/04/01	01/05/01	MCM	Technetium 99 in Soil	
			7576-002	U		12/22/00	01/05/01	MCM	Uranium, Isotopic in Soil	
Method Blank		R011166-04	7576-004	H		12/23/00	01/05/01	MCM	Tritium in Soil	
			7576-004	SR		12/14/00	01/05/01	MCM	Total Strontium in Soil	
	B99-029		7576-004	TC		12/28/00	01/05/01	MCM	Technetium 99 in Soil	
			7576-004	U		12/26/00	01/05/01	MCM	Uranium, Isotopic in Soil	
Lab Control Sample		R011166-03	7576-003	H		12/23/00	01/05/01	MCM	Tritium in Soil	
			7576-003	SR		12/14/00	01/05/01	MCM	Total Strontium in Soil	
	B99-029		7576-003	TC		01/02/01	01/05/01	MCM	Technetium 99 in Soil	
			7576-003	U		12/26/00	01/05/01	MCM	Uranium, Isotopic in Soil	
Duplicate (R011166-02)		R011166-05	7576-005	H		12/23/00	01/05/01	MCM	Tritium in Soil	
100-KR-4		11/20/00	7576-005	SR		12/14/00	01/05/01	MCM	Total Strontium in Soil	
	B99-029	11/22/00	7576-005	TC		12/29/00	01/05/01	MCM	Technetium 99 in Soil	
			7576-005	U		12/22/00	01/05/01	MCM	Uranium, Isotopic in Soil	

COUNTS OF TESTS BY SAMPLE TYPE										
TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
H	B99-029	Tritium in Soil	TRITIUM_COX_LSC	2			1	1	1	5
SR	B99-029	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	2			1	1	1	5
TC	B99-029	Technetium 99 in Soil	TC99_TR_SEP_LSC	2			1	1	1	5
U	B99-029	Uranium, Isotopic in Soil	UIISO_PLATE_AEA	2			1	1	1	5
TOTALS				8			4	4	4	20

WORK SUMMARY

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Lab id TMANC
 Protocol Hanford
 Version Ver 1.0
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 Version 3.06
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T M A / R I C H M O N D
S A M P L E D E L I V E R Y G R O U P H 1 1 5 2

R011166-04

Method Blank

M E T H O D B L A N K

SDG <u>7576</u>	Client/Case no <u>Hanford</u>	SDG <u>H1152</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>TRC-SBB-207925</u>	
Lab sample id <u>R011166-04</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7576-004</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>B99-029</u>	

ANALYTE	CAS NO	RESULT pCi/g	2 σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	0.059	2.8	4.8	400	U	H
Total Strontium	SR-RAD	0.024	0.11	0.23	1.0	U	SR
Technetium 99	14133-76-7	0.051	0.22	0.66	15	U	TC
Uranium 233	U-233/234	0	0.037	0.14	1.0	U	U
Uranium 235	15117-96-1	0.022	0.045	0.17	1.0	U	U
Uranium 238	U-238	0.055	0.074	0.14	1.0	U	U

100-HR-4 Pump & Treat-Resin Sampling

QC-BLANK #36909

METHOD BLANKS

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Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>01/05/01</u>

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1152

R01166-03

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7576</u> Contact <u>Melissa C. Mannion</u>	Client/Case no <u>Hanford</u> SDG <u>H1152</u> Case no <u>TRC-SBB-207925</u>
Lab sample id <u>R01166-03</u> Dept sample id <u>7576-003</u>	Client sample id <u>Lab Control Sample</u> Material/Matrix <u>SOLID</u> SAF No <u>B99-029</u>

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	1450	19	4.7	400		H	1480	59	98	84-116	80-120
Total Strontium	24.2	0.83	0.23	1.0		SR	23.1	0.92	105	82-118	80-120
Technetium 99	134	2.8	0.95	15		TC	131	5.2	102	83-117	80-120
Uranium 233	18.9	1.6	0.79	1.0		U	19.3	0.77	98	84-116	80-120
Uranium 235	17.2	1.5	0.15	1.0		U	15.7	0.63	110	82-118	80-120
Uranium 238	21.8	1.7	0.76	1.0		U	21.0	0.84	104	84-116	80-120

100-HR-4 Pump & Treat-Resin Sampling

QC-LCS #36908

LAB CONTROL SAMPLES

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Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
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Form <u>DVD-LCS</u>
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TMA/RICHMOND
SAMPLE DELIVERY GROUP H1152

R011166-05

B10V61

DUPLICATE

SDG <u>7576</u>		Client/Case no <u>Hanford</u> <u>SDG H1152</u>	
Contact <u>Melissa C. Mannion</u>		Case no <u>TRC-SBB-207925</u>	
DUPLICATE		ORIGINAL	
Lab sample id <u>R011166-05</u>	Lab sample id <u>R011166-02</u>	Client sample id <u>B10V61</u>	
Dept sample id <u>7576-005</u>	Dept sample id <u>7576-002</u>	Location/Matrix <u>100-KR-4</u> <u>SOLID</u>	
	Received <u>11/22/00</u>	Collected <u>11/20/00 09:20</u>	
% solids <u>100.0</u>	% solids <u>100.0</u>	Custody/SAF No <u>B99-029-62</u> <u>B99-029</u>	

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI- FIERS	RPD %	3σ TOT	PROT LIMIT
Tritium	11.6	3.3	4.8	400	J	H	7.86	3.1	4.7	J	38	73	
Total Strontium	-0.014	0.12	0.24	1.0	U	SR	-0.024	0.089	0.19	U	-		
Technetium 99	2.14	0.44	1.0	15	J	TC	2.18	0.41	1.1	J	2	47	
Uranium 233	3.64	0.62	0.17	1.0		U	3.62	0.66	0.18		1	39	
Uranium 235	0.134	0.11	0.20	1.0	U	U	0.170	0.11	0.22	U	-		
Uranium 238	2.78	0.52	0.17	1.0		U	2.46	0.50	0.18		12	43	

100-HR-4 Pump & Treat-Resin Sampling

QC-DUP#2 36910

DUPLICATES

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 01/05/01

TMA / RICHMOND
SAMPLE DELIVERY GROUP H1152

R011166-01

B10V60

D A T A S H E E T

SDG <u>7576</u>	Client/Case no <u>Hanford</u>	SDG <u>H1152</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>TRC-SBB-207925</u>	
Lab sample id <u>R011166-01</u>	Client sample id <u>B10V60</u>	
Dept sample id <u>7576-001</u>	Location/Matrix <u>100-KR-4</u>	<u>SOLID</u>
Received <u>11/22/00</u>	Collected <u>11/20/00 09:05</u>	
% solids <u>100.0</u>	Custody/SAF No <u>B99-029-62</u>	<u>B99-029</u>

ANALYTE	CAS NO	RESULT pCi/g	2 σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	10.1	3.2	4.8	400	J	H
Total Strontium	SR-RAD	0.032	0.11	0.23	1.0	U	SR
Technetium 99	14133-76-7	2.07	0.77	2.2	15	U	TC
Uranium 233	U-233/234	4.00	0.65	0.18	1.0		U
Uranium 235	15117-96-1	0.252	0.17	0.21	1.0	J	U
Uranium 238	U-238	3.10	0.59	0.18	1.0		U

100-HR-4 Pump & Treat-Resin Sampling

DATA SHEETS

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SUMMARY DATA SECTION

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Lab id <u>TMANC</u>
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Version <u>3.06</u>
Report date <u>01/05/01</u>

TMA / RICHMOND
SAMPLE DELIVERY GROUP H1152

R011166-02

B10V61

D A T A S H E E T

SDG <u>7576</u>	Client/Case no <u>Hanford</u>	SDG <u>H1152</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>TRC-SBB-207925</u>	
Lab sample id <u>R011166-02</u>	Client sample id <u>B10V61</u>	
Dept sample id <u>7576-002</u>	Location/Matrix <u>100-KR-4</u>	<u>SOLID</u>
Received <u>11/22/00</u>	Collected <u>11/20/00 09:20</u>	
% solids <u>100.0</u>	Custody/SAF No <u>B99-029-62</u>	<u>B99-029</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	7.86	3.1	4.7	400	J	H
Total Strontium	SR-RAD	-0.024	0.089	0.19	1.0	U	SR
Technetium 99	14133-76-7	2.18	0.41	1.1	15	J	TC
Uranium 233	U-233/234	3.62	0.66	0.18	1.0		U
Uranium 235	15117-96-1	0.170	0.11	0.22	1.0	U	U
Uranium 238	U-238	2.46	0.50	0.18	1.0		U

100-HR-4 Pump & Treat-Resin Sampling

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1152

Test U Matrix SOLID
SDG 7576
Contact Melissa C. Mannion

METHOD SUMMARY
URANIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1152

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUF- TEST FIX PLANCHET	1: Uranium 233	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%)			
						1+3	2σ	2+3	2σ
Preparation batch 6962-148									
B10V60	R011166-01	7576-001	4.00	0.252 J	3.10	129	32	8	6
B10V61	R011166-02	7576-002	3.62	U	2.46	<u>147</u>	40	7	5
BLK (QC ID=36909)	R011166-04	7576-004	U	U	U				
LCS (QC ID=36908)	R011166-03	7576-003	ok	ok	ok				
Duplicate (R011166-02)	R011166-05	7576-005	ok	- U	ok	131	33	5	4
Nominal values and limits from method									
		RDLs (pCi/g)	1.0	1.0	1.0	100		4	
100-HR-4 Pump & Treat-Resin Sampling						Averages 136		7	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUF- TEST FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 6962-148 2σ prep error 5.0 % Reference Lab Notebook 6962 pg. 148															
B10V60	R011166-01		0.21	0.500			90	110			32	12/15/00	12/22	SS-029	
B10V61	R011166-02		0.22	0.520			85	110			32	12/15/00	12/22	SS-031	
BLK (QC ID=36909)	R011166-04		0.17	0.500			80	153				12/15/00	12/26	SS-031	
LCS (QC ID=36908)	R011166-03		0.79	0.500			92	153				12/15/00	12/26	SS-029	
Duplicate (R011166-02)	R011166-05		0.20	0.520			90	110			32	12/15/00	12/22	SS-032	
(QC ID=36910)															
Nominal values and limits from method															
			1.0	0.500			20-105	100	100		180				

PROCEDURES REFERENCE UIISO_PLATE_AEA
CP-911 Uranium in Water and Dissolved Sample by
Extraction Chromatography, rev 2
CP-008 Heavy Element Electroplating, rev 3

AVERAGES ± 2 SD MDA 0.32 ± 0.53
FOR 5 SAMPLES YIELD 87 ± 10

METHOD SUMMARIES

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TMA/RICHMOND
SAMPLE DELIVERY GROUP H1152

Test SR Matrix SOLID
SDG 7576
Contact Melissa C. Mannion

METHOD SUMMARY
TOTAL STRONTIUM IN SOIL
BETA COUNTING

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1152

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Total Strontium
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Preparation batch 6962-148

B10V60	R011166-01		7576-001	U
B10V61	R011166-02		7576-002	U
BLK (QC ID=36909)	R011166-04		7576-004	U
LCS (QC ID=36908)	R011166-03		7576-003	ok
Duplicate (R011166-02)	R011166-05		7576-005	- U

Nominal values and limits from method RDLs (pCi/g) 1.0
100-HR-4 Pump & Treat-Resin Sampling

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- pCi/g	MDA	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
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Preparation batch 6962-148 2σ prep error 10.0 % Reference Lab Notebook 6962 pg. 148

B10V60	R011166-01		0.23	1.00				75	100			24	12/14/00	12/14	GRB-202	
B10V61	R011166-02		0.19	1.05				81	100			24	12/14/00	12/14	GRB-232	
BLK (QC ID=36909)	R011166-04		0.23	1.00				76	100				12/14/00	12/14	GRB-207	
LCS (QC ID=36908)	R011166-03		0.23	1.00				78	100				12/14/00	12/14	GRB-204	
Duplicate (R011166-02)	R011166-05		0.24	1.06				76	100			24	12/14/00	12/14	GRB-208	
(QC ID=36910)																

Nominal values and limits from method 1.0 1.00 30-105 100 180

PROCEDURES	REFERENCE	SRTOT_SEP_PRECIP_GPC
CP-502	Strontium in Solids, rev 2	
CP-519	Strontium Planchet Demounting and Preparation for 90Y Decontamination, rev 2	

AVERAGES ± 2 SD	MDA	0.22 ± 0.039
FOR 5 SAMPLES	YIELD	77 ± 5

METHOD SUMMARIES

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Lab id	TMANC
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TMA/RICHMOND
SAMPLE DELIVERY GROUP H1152

Test TC Matrix SOLID
SDG 7576
Contact Melissa C. Mannion

METHOD SUMMARY
TECHNETIUM 99 IN SOIL
BETA COUNTING

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1152

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUF- TEST FIX	PLANCHET	Technetium 99
Preparation batch 6962-148				
B10V60	R011166-01	7576-001		U
B10V61	R011166-02	7576-002		2.18 J
BLK (QC ID=36909)	R011166-04	7576-004		U
LCS (QC ID=36908)	R011166-03	7576-003		ok
Duplicate (R011166-02)	R011166-05	7576-005		ok J

Nominal values and limits from method RDLs (pCi/g) 15
100-HR-4 Pump & Treat-Resin Sampling

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUF- TEST FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 6962-148 2σ prep error 10.0 % Reference Lab Notebook 6962 pg. 148															
B10V60	R011166-01		2.2	1.05			22		50			39	12/19/00	12/29	GRB-230
B10V61	R011166-02		1.1	1.02			44		50			45	12/19/00	01/04	GRB-203
BLK (QC ID=36909)	R011166-04		0.66	1.00			83		50				12/19/00	12/28	GRB-204
LCS (QC ID=36908)	R011166-03		0.95	1.00			52		50				12/19/00	01/02	GRB-230
Duplicate (R011166-02) (QC ID=36910)	R011166-05		1.0	1.02			49		50			39	12/19/00	12/29	GRB-232

Nominal values and limits from method 15 1.00 20-105 50 180

PROCEDURES REFERENCE TC99_TR_SEP_LSC
CP-060 Soil Preparation, rev 2
CP-021 Preparation of Tc-99m Tracer, rev 0
CP-002 Q.C. Preparation, rev 2
CP-003 Tracing, rev 2
CP-542 Technetium-99 Purification (Soil) by Extraction
Chromatography, rev 0
CP-008 Heavy Element Electroplating, rev 3

AVERAGES ± 2 SD MDA 1.2 ± 1.2
FOR 5 SAMPLES YIELD 50 ± 44

METHOD SUMMARIES

Page 3

SUMMARY DATA SECTION

Page 14

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/05/01

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1152

Test H Matrix SOLID
SDG 7576
Contact Melissa C. Mannion

METHOD SUMMARY
TRITIUM IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1152

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUF- TEST FIX	PLANCHET	Tritium
Preparation batch 6962-148				
B10V60	R011166-01	7576-001	10.1	J
B10V61	R011166-02	7576-002	7.86	J
BLK (QC ID=36909)	R011166-04	7576-004	U	
LCS (QC ID=36908)	R011166-03	7576-003	ok	
Duplicate (R011166-02)	R011166-05	7576-005	ok	J

Nominal values and limits from method RDLs (pCi/g) 400
100-HR-4 Pump & Treat-Resin Sampling

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUF- TEST FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 6962-148 2σ prep error 10.0 % Reference Lab Notebook 6962 pg. 148															
B10V60	R011166-01		4.8	0.204			100		100			33	12/20/00	12/23	LSC-007
B10V61	R011166-02		4.7	0.206			100		100			33	12/20/00	12/23	LSC-007
BLK (QC ID=36909)	R011166-04		4.8	0.200			100		100				12/20/00	12/23	LSC-007
LCS (QC ID=36908)	R011166-03		4.7	0.200			100		100				12/20/00	12/23	LSC-007
Duplicate (R011166-02)	R011166-05		4.8	0.203			100		100			33	12/20/00	12/23	LSC-007
(QC ID=36910)															

Nominal values and limits from method 400 0.200 25 180

PROCEDURES REFERENCE TRITIUM_COX_LSC
CP-060 Soil Preparation, rev 2
CP-251 Tritium/Carbon-14 Oxidation, rev 2

AVERAGES ± 2 SD MDA 4.8 ± 0.11
FOR 5 SAMPLES YIELD 100 ± 0

METHOD SUMMARIES

Page 4

SUMMARY DATA SECTION

Page 15

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/05/01

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						B99-029-62		Page 1 of 1				
Collector Johansen		Company Contact T Pickett		Telephone No. 373-4630		Project Coordinator TRENT, SJ		Price Code 9N		Data Turnaround 45 Days				
Project Designation 100-KR-4 Pump & Treat - Resin Sampling		Sampling Location 100-KR-4		H/152 (7576)		SAF No. B99-029		Air Quality <input type="checkbox"/>						
Ice Chest No. SML-188		Field Logbook No. EL-1516		COA R10KR4C570		Method of Shipment Federal Express								
Shipped To TMA/RECA mo 11-16-00		Offsite Property No. A010012		Bill of Lading/Air Bill No. 423579540739										
POSSIBLE SAMPLE HAZARDS/REMARKS HISTORICAL DATA INDICATES SAMPLES ARE LESS THAN 2000 pci TOTAL ACTIVITY. NO TOTAL ACTIVITY REQUIRED Special Handling and/or Storage NONE				Preservation		None	None	None	None	Cool 4C	Cool 4C	None	None	
				Type of Container		aG	aG	aG	aG	aG	aG	aG	aG	
				No. of Container(s)		1	1	1	1	1	1	1	1	
				Volume		60mL	60mL	60mL	125mL	250mL	250mL	250mL	500mL	
SAMPLE ANALYSIS				Isotopic Uranium	Strontium-89,90 - Total Sr	Technetium-99	Tritium - H3	Semi-VOA - 8270A (TCL) (Bis(2-ethylhexyl) phthalate)	See item (1) in Special Instructions.	IC Analysis 300.0 (Nirx)	See item (2) in Special Instructions.			
Sample No.	Matrix *	Sample Date	Sample Time											
B10V60	OTHER SOLID	11-20-00	0900	X	X	X	X					97710		
B10V61	OTHER SOLID	11-20-00	0920	X	X	X	X					97721		
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS SAMPLE ORIGINATED IN NON CONTROLLED RADIOLOGICAL AREA. <2000 PCIVG. NO TA REQUIRED FOR SHIPPING, BUT THE PROJECT STILL WANTS TO RUN A TA FOR PROJECT INFORMATION, PER JULIAN LARUNEZ. (1) VOA - 8260A (TCL) (Chloroform, Methylenechloride); VOA - 8260A (Add-On) (Trichloromono-fluoromethane) (2) Metals by ICP (TCLP) - 1311/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Metals by ICP (TCLP) Add-on - 1311/6010 (Antimony, Beryllium, Nickel)						
Relinquished By		Date/Time		Received By		Date/Time								
Relinquished By		Date/Time		Received By		Date/Time								
Relinquished By		Date/Time		Received By		Date/Time								
Relinquished By		Date/Time		Received By		Date/Time								
Relinquished By		Date/Time		Received By		Date/Time								
LABORATORY SECTION		Received By		Title		Date/Time								
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time								

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT			
Client: <u>Bechtel Hanford</u>		Date/Time received <u>11-22-00 10:00</u>	
CoC No. <u>B99-028-57, B99-029-62</u>			
Container I.D. No. <u>SML-180</u>		Requested TAT (Days) <u>45</u> P.O. Received Yes [] No [x]	
INSPECTION			
1.	Custody seals on shipping container intact?	Yes [x]	No [] N/A []
2.	Custody seals on shipping container dated & signed?	Yes [x]	No [] N/A []
3.	Custody seals on sample containers intact?	Yes [x]	No [] N/A []
4.	Custody seals on sample containers dated & signed?	Yes [x]	No [] N/A []
5.	Cooler Temperature: _____	Packing material is:	Wet [] Dry [x]
6.	Number of samples in shipping container: <u>4</u>		
7.	Number of containers per sample: <u>4</u> (Or see CoC _____)		
8.	Paperwork agrees with samples?	Yes [x]	No []
9.	Samples have: Tape [x] Hazard labels [] Rad labels [] Appropriate sample labels [x]		
10.	Samples are: In good condition [x] Leaking [] Broken Container [] Missing []		
11.	Describe any anomalies: <u>The ice chest was shipped on 11-20-00 and got to Thermo Retec on 11-22-00</u>		
13.	Was P.M. notified of any anomalies? Yes [x] No [] Date <u>11-22-00</u>		
14.	Received by <u>HA Corrao</u> Date: <u>11-22-00</u> Time: <u>10:00</u>		

Customer Sample No.	cpm	mr/hr	Customer Sample No.	Cpm	mr/hr

Ion Chamber Ser. No. _____

Calibration date _____

Survey Meter Ser No. _____

Calibration date _____

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-029 H1152

DATE RECEIVED: 11/21/00

RFW LOT # :0011L346

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
---------------------	-------	-----	--------	------------	-----------	----------

B10V60

% SOLIDS	001	SO	00L%S187	11/20/00	11/27/00	11/28/00
% SOLIDS	001 REP	SO	00L%S187	11/20/00	11/27/00	11/28/00
NITRATE BY IC	001	SO	00LXC080	11/20/00	12/15/00	12/15/00
NITRATE BY IC	001 REP	SO	00LXC080	11/20/00	12/15/00	12/15/00
NITRATE BY IC	001 MS	SO	00LXC080	11/20/00	12/15/00	12/15/00
TCLP	001	SO	00LTO141	11/20/00	12/14/00	12/15/00

B10V61

% SOLIDS	002	SO	00L%S187	11/20/00	11/27/00	11/28/00
NITRATE BY IC	002	SO	00LXC080	11/20/00	12/15/00	12/15/00
TCLP	002	SO	00LTO141	11/20/00	12/14/00	12/15/00

LAB QC:

NITRATE BY IC	MB1	S	00LXC080	N/A	12/15/00	12/15/00
NITRATE BY IC	MB1 BS	S	00LXC080	N/A	12/15/00	12/15/00



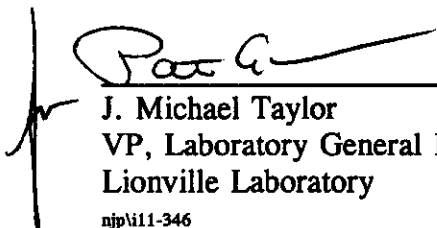
**Recra LabNet Philadelphia
Analytical Report**

Client : TNU-HANFORD B99-029 H1152
RFW# : 0011L346

W.O. # : 10985-001-001-9999-00
Date Received: 11-21-00

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 2 solid samples.
2. The samples were prepared and analyzed in accordance with the methods indicated on the attached glossary.
3. Sample holding times as required by the method and/or contract were met.
4. The cooler temperature was recorded on the chain-of-custody.
5. The method blank for Nitrate was within method criteria.
6. The Laboratory Control Sample (LCS) for Nitrate was within the laboratory control limits.
7. The matrix spike recovery for Nitrate was within the 75-125% control limits.
8. The replicate analyses were within the 20% Relative Percent Difference (RPD) control limit.
9. Results for solid samples were reported on a dry weight basis.
10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.



J. Michael Taylor
VP, Laboratory General Manager
Lionville Laboratory
njpvl11-346

01-05-01
Date

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 10 pages.

WET CHEMISTRY
METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	<u>ASTM</u>	<u>SW846</u>	<u>OTHER</u>
% Ash	___ D2216-80		
% Moisture	___ D2216-80		___ ILMO4.0 (e)
% Solids	✓ ___ D2216-80		___ ILMO4.0 (e)
% Volatile Solids	___ D2216-80		
ASTM Extraction in Water	___ D3987-81/85		
BTU	___ D240-87		
CEC		___ 9081	___ c
Chromium VI		___ 3060A/7196A	
Corrosivity ___ by coupon ___ by pH		___ 1110(mod) ___ 9045C	
Cyanide, Total		___ 9010B	___ ILMO4.0 (e)
Cyanide, Reactive		___ Section 7.3/9014	
Halides, Extractable Organic		___ 9020B	___ EPA 600/4/84-008
Halides, Total		___ 9020B	___ EPA 600/4/84-008
EP Toxicity		___ 1310A	
Flash Point		___ 1010	
Ignitability		___ 1010	
Oil & Grease		___ 9071A	
Carbon, Total Organic		___ 9060	___ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions ___ D240-87(mod)		___ 5050	
Petroleum Hydrocarbons, Total Recoverable		___ 9071	___ EPA 418.1
pH, Soil		___ 9045C	
Sulfide, Reactive		___ Section 7.3/9030B	
Sulfide		___ 9030B(mod)	
Specific Gravity	___ D1429-76C/	___ D5057-90	
Sulfur, Total		___ 9056	
Synthetic Preparation Leach		___ 1312	
Paint Filter		___ 9095A	
Other: <i>Nitrate</i>	Method: <i>EPA 300.0(mod)</i>		
Other:	Method		

Recra LabNet Philadelphia
METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.

MS = Matrix Spike.

MSD = Matrix Spike Duplicate.

REP = Sample Replicate

LC = Laboratory Control Sample.

NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.
2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).
3. Test Methods for Evaluating Solid Waste (USEPA SW-846).
 - a. Standard Methods for the Examination of Water and Waste, 16 ed, (1983).
 - b. Standard Methods for the Examination of Water and Waste, 17 ed, (1989)/18ed (1992).
 - c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd ed, (1986).
 - d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965).
 - e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.
 - f. Code of Federal Regulations.

L-WI-034/D-6/99

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/19/00

CLIENT: TNUHANFORD B99-029 H1152
WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 0011L346

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
-001	B10V60	% Solids	47.5	%	0.01	1.0
		Nitrate by IC	16	MG/KG	2.6	1.0
-002	B10V61	% Solids	47.0	%	0.01	1.0
		Nitrate by IC	17	MG/KG	2.7	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 12/19/00

CLIENT: TNUHANFORD B99-029 H1152
WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 0011L346

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	00LXC080-MB1	Nitrate by IC	1.2	u MG/KG	1.2	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 12/19/00

CLIENT: TNUHANFORD B99-029 H1152
WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 0011L346

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-001	B10V60	Nitrate by IC	68	16	53	97.9	1.0
BLANK10	00LXC080-MB1	Nitrate by IC	24	1.2 u	25	96.8	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 12/19/00

CLIENT: TNUHANFORD B99-029 H1152
WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 0011L346

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR (REP)
-----	-----	-----	-----	-----	-----	-----
-001REP	B10V60	% Solids	47.5	47.5	0.00	1.0
		Nitrate by IC	16	15	7.0	1.0

RECRA LabNet Use Only

Custody Transfer Record/Lab Work Request Page 1 of 1

Page 1 of 1

0011L346

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

**RECRA
LabNet**

[illegible]

Special Instructions: S99 B99.029

Run Matrix QC

DATE/REVISIONS:

* 1. See labchron
Mf + (1) 2. AS, Ba, Cd, Cr, Pb, Se, Ag, Sb, Br, Ni

3

1

5

6

7

Relinquished by	Received by	Date	Time
Henri Ex	D. Fried	11/21/00	10:15

Relinquished by	Received by	Date	Time
<div style="display: flex; justify-content: space-around;"> COMPOSITE ORIGINAL </div>			

Discrepancies Between
Samples Labels and
COC Record? Y or N

47357054 0717

RECRA LabNet Use Only

Samples were:	COC Tape was:
1) Shipped <input checked="" type="checkbox"/> or	1) Present on Outer
Hand Delivered	Package <input checked="" type="checkbox"/> or N
Airbill #	2) Unbroken on Outer
2) Ambient or <u>Chilled</u>	Package <input checked="" type="checkbox"/> or N
3) Received in Good	3) Present on Sample
Condition <input checked="" type="checkbox"/> or N	<input checked="" type="checkbox"/> or N
4) Labels Indicate	4) Unbroken on
Properly Preserved	Sample <input checked="" type="checkbox"/> or N
<input checked="" type="checkbox"/> or N	COC Record Present
5) Received Within	Upon Sample Rec'd
Holding Times	<input checked="" type="checkbox"/> or N
<input checked="" type="checkbox"/> or N	Cooler
	Temp. 3.1 °C

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						B99-029-62		Page <u>1</u> of <u>1</u>				
Collector Johansen		Company Contact T Pickett		Telephone No. 373-4630		Project Coordinator TRENT, SJ		Price Code 9N		Data Turnaround 45 Days				
Project Designation 100-KR-4 Pump & Treat - Resin Sampling		Sampling Location 100-KR-4		SAF No. B99-029		Air Quality <input type="checkbox"/>								
Ice Chest No. ERC 99-042		Field Logbook No. EL-1516		COA R10KR4C570		Method of Shipment Federal Express								
Shipped To FMA/RECRA 11/25 11:16:00		Offsite Property No. A 010031		Bill of Lading/Air Bill No. 423579540717										
POSSIBLE SAMPLE HAZARDS/REMARKS HISTORICAL DATA INDICATES SAMPLES ARE LESS THAN 2000 pci TOTAL ACTIVITY. NO TOTAL ACTIVITY REQUIRED Special Handling and/or Storage NONE				Preservation		None	None	None	None	Cool 4C	Cool 4C	None	None	
				Type of Container		aG	aG	aG	aG	aG	aG	aG	aG	
				No. of Container(s)		1	1	1	1	1	1	1	1	
				Volume		60mL	60mL	60mL	125mL	250mL	250mL	250mL	500mL	
SAMPLE ANALYSIS				Isotopic Uranium	Strontium-89,90 -- Total Sr	Techonium-99	Barium-113	Semi-VOA - R270A (TCL) (Bis(2-ethylhexyl) phthalate)	See item (1) in Special Instructions	IC Anions - 100 0 (Nitrate)	See item (2) in Special Instructions			
Sample No.	Matrix *	Sample Date	Sample Time											
B10V60	OTHER SOLID	11-20-00	0905					X	X	X	X	97710		
B10V61	OTHER SOLID	11-20-00	0920					X	X	X	X	97724		
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS SAMPLE ORIGINATED IN NON CONTROLLED RADIOLOGICAL AREA. <2000 PC/G. NO TA REQUIRED FOR SHIPPING, BUT THE PROJECT STILL WANTS TO RUN A TA FOR PROJECT INFORMATION, PER JULIAN LARUNEZ. (1) VOA - 8260A (TCL) (Chloroform, Methylenechloride); VOA - 8260A (Add-On) (Trichloromonofluoromethane) (2) Metals by ICP (TCLP) - 1311/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Metals by ICP (TCLP) Add-on - 1311/6010 (Antimony, Beryllium, Nickel)						
Relinquished By <i>[Signature]</i>		Date/Time <i>11-20-00 12:00</i>		Received By <i>[Signature]</i>		Date/Time <i>11-20-00 12:00</i>								
Relinquished By <i>[Signature]</i>		Date/Time <i>11-21-00 10:15</i>		Received By <i>[Signature]</i>		Date/Time <i>11-21-00 10:15</i>								
Relinquished By		Date/Time		Received By		Date/Time								
Relinquished By		Date/Time		Received By		Date/Time								
Relinquished By		Date/Time		Received By		Date/Time								
LABORATORY SECTION		Received By		Title				Date/Time						
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time						

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-029 H1152



DATE RECEIVED: 11/21/00

RFW LOT # :0011L346

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B10V60						
TCLP	001	SO	00LTO141	11/20/00	12/14/00	12/15/00
B10V61						
TCLP	002	SO	00LTO141	11/20/00	12/14/00	12/15/00
B10V60						
SILVER, TCLP LEACHAT	003	W	99L1822	12/15/00	12/15/00	12/19/00
SILVER, TCLP LEACHAT	003 REP	W	99L1822	12/15/00	12/15/00	12/19/00
SILVER, TCLP LEACHAT	003 MS	W	99L1822	12/15/00	12/15/00	12/19/00
ARSENIC, TCLP LEACHA	003	W	99L1822	12/15/00	12/15/00	12/18/00
ARSENIC, TCLP LEACHA	003 REP	W	99L1822	12/15/00	12/15/00	12/18/00
ARSENIC, TCLP LEACHA	003 MS	W	99L1822	12/15/00	12/15/00	12/18/00
BARIUM, TCLP LEACHAT	003	W	99L1822	12/15/00	12/15/00	12/19/00
BARIUM, TCLP LEACHAT	003 REP	W	99L1822	12/15/00	12/15/00	12/19/00
BARIUM, TCLP LEACHAT	003 MS	W	99L1822	12/15/00	12/15/00	12/19/00
BERYLLIUM, TCLP LEAC	003	W	99L1822	12/15/00	12/15/00	12/19/00
BERYLLIUM, TCLP LEAC	003 REP	W	99L1822	12/15/00	12/15/00	12/19/00
BERYLLIUM, TCLP LEAC	003 MS	W	99L1822	12/15/00	12/15/00	12/19/00
CADMIUM, TCLP LEACHA	003	W	99L1822	12/15/00	12/15/00	12/18/00
CADMIUM, TCLP LEACHA	003 REP	W	99L1822	12/15/00	12/15/00	12/18/00
CADMIUM, TCLP LEACHA	003 MS	W	99L1822	12/15/00	12/15/00	12/18/00
CHROMIUM, TCLP LEACH	003	W	99L1822	12/15/00	12/15/00	12/18/00
CHROMIUM, TCLP LEACH	003 REP	W	99L1822	12/15/00	12/15/00	12/18/00
CHROMIUM, TCLP LEACH	003 MS	W	99L1822	12/15/00	12/15/00	12/18/00
NICKEL, TCLP LEACHAT	003	W	99L1822	12/15/00	12/15/00	12/19/00
NICKEL, TCLP LEACHAT	003 REP	W	99L1822	12/15/00	12/15/00	12/19/00
NICKEL, TCLP LEACHAT	003 MS	W	99L1822	12/15/00	12/15/00	12/19/00
LEAD, TCLP LEACHATE	003	W	99L1822	12/15/00	12/15/00	12/18/00
LEAD, TCLP LEACHATE	003 REP	W	99L1822	12/15/00	12/15/00	12/18/00
LEAD, TCLP LEACHATE	003 MS	W	99L1822	12/15/00	12/15/00	12/18/00
ANTIMONY, TCLP LEACH	003	W	99L1822	12/15/00	12/15/00	12/18/00
ANTIMONY, TCLP LEACH	003 REP	W	99L1822	12/15/00	12/15/00	12/18/00
ANTIMONY, TCLP LEACH	003 MS	W	99L1822	12/15/00	12/15/00	12/18/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-029 H1152

DATE RECEIVED: 11/21/00

RFW LOT # :0011L346

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SELENIUM, TCLP LEACH	003	W	99L1822	12/15/00	12/15/00	12/18/00
SELENIUM, TCLP LEACH	003 REP	W	99L1822	12/15/00	12/15/00	12/18/00
SELENIUM, TCLP LEACH	003 MS	W	99L1822	12/15/00	12/15/00	12/18/00

B10V61

SILVER, TCLP LEACHAT	004	W	99L1822	12/15/00	12/15/00	12/19/00
ARSENIC, TCLP LEACHA	004	W	99L1822	12/15/00	12/15/00	12/18/00
BARIUM, TCLP LEACHAT	004	W	99L1822	12/15/00	12/15/00	12/19/00
BERYLLIUM, TCLP LEAC	004	W	99L1822	12/15/00	12/15/00	12/19/00
CADMIUM, TCLP LEACHA	004	W	99L1822	12/15/00	12/15/00	12/18/00
CHROMIUM, TCLP LEACH	004	W	99L1822	12/15/00	12/15/00	12/18/00
NICKEL, TCLP LEACHAT	004	W	99L1822	12/15/00	12/15/00	12/19/00
LEAD, TCLP LEACHATE	004	W	99L1822	12/15/00	12/15/00	12/18/00
ANTIMONY, TCLP LEACH	004	W	99L1822	12/15/00	12/15/00	12/18/00
SELENIUM, TCLP LEACH	004	W	99L1822	12/15/00	12/15/00	12/18/00

LAB QC:

SILVER LABORATORY	LC1 BS	W	99L1822	N/A	12/15/00	12/19/00
SILVER, TCLP LEACHAT	MB1	W	99L1822	N/A	12/15/00	12/19/00
SILVER, TCLP LEACHAT	MB2	W	99L1822	N/A	12/15/00	12/19/00
ARSENIC LABORATORY	LC1 BS	W	99L1822	N/A	12/15/00	12/18/00
ARSENIC, TCLP LEACHA	MB1	W	99L1822	N/A	12/15/00	12/18/00
ARSENIC, TCLP LEACHA	MB2	W	99L1822	N/A	12/15/00	12/18/00
BARIUM LABORATORY	LC1 BS	W	99L1822	N/A	12/15/00	12/19/00
BARIUM, TCLP LEACHAT	MB1	W	99L1822	N/A	12/15/00	12/19/00
BARIUM, TCLP LEACHAT	MB2	W	99L1822	N/A	12/15/00	12/19/00
BERYLLIUM LABORATORY	LC1 BS	W	99L1822	N/A	12/15/00	12/19/00
BERYLLIUM, TCLP LEAC	MB1	W	99L1822	N/A	12/15/00	12/19/00
BERYLLIUM, TCLP LEAC	MB2	W	99L1822	N/A	12/15/00	12/19/00
CADMIUM LABORATORY	LC1 BS	W	99L1822	N/A	12/15/00	12/18/00
CADMIUM, TCLP LEACHA	MB1	W	99L1822	N/A	12/15/00	12/18/00
CADMIUM, TCLP LEACHA	MB2	W	99L1822	N/A	12/15/00	12/18/00
CHROMIUM LABORATORY	LC1 BS	W	99L1822	N/A	12/15/00	12/18/00
CHROMIUM, TCLP LEACH	MB1	W	99L1822	N/A	12/15/00	12/18/00
CHROMIUM, TCLP LEACH	MB2	W	99L1822	N/A	12/15/00	12/18/00
NICKEL LABORATORY	LC1 BS	W	99L1822	N/A	12/15/00	12/19/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-029 H1152

DATE RECEIVED: 11/21/00

RFW LOT # :0011L346

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NICKEL, TCLP LEACHAT	MB1	W	99L1822	N/A	12/15/00	12/19/00
NICKEL, TCLP LEACHAT	MB2	W	99L1822	N/A	12/15/00	12/19/00
LEAD LABORATORY	LC1 BS	W	99L1822	N/A	12/15/00	12/18/00
LEAD, TCLP LEACHATE	MB1	W	99L1822	N/A	12/15/00	12/18/00
LEAD, TCLP LEACHATE	MB2	W	99L1822	N/A	12/15/00	12/18/00
ANTIMONY LABORATORY	LC1 BS	W	99L1822	N/A	12/15/00	12/18/00
ANTIMONY, TCLP LEACH	MB1	W	99L1822	N/A	12/15/00	12/18/00
ANTIMONY, TCLP LEACH	MB2	W	99L1822	N/A	12/15/00	12/18/00
SELENIUM LABORATORY	LC1 BS	W	99L1822	N/A	12/15/00	12/18/00
SELENIUM, TCLP LEACH	MB1	W	99L1822	N/A	12/15/00	12/18/00
SELENIUM, TCLP LEACH	MB2	W	99L1822	N/A	12/15/00	12/18/00

**Recra LabNet Philadelphia
Analytical Report**

Client: TNU-HANFORD B99-029
RFW#: 0011L346
SDG/SAF#: H1152/B99-029

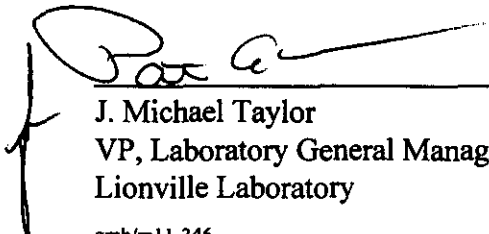
W.O.#: 10985-001-001-9999-00
Date Received: 11-21-00

METALS CASE NARRATIVE

1. This narrative covers the analyses of 2 TCLP leachate samples.
2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.
3. All analyses were performed within the required holding times.
4. The cooler temperature has been recorded on the Chain of Custody.
5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).
6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).
7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.
8. All ICP Interference Check Standards were within control limits.
9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to form 7.
10. The duplicate analysis for 1 analyte was outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.
11. The TCLP extract from sample B10V60 was selected for the matrix spike (MS) for this analytical batch. All MS recoveries were greater than 50% as per method criteria.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of **14** pages.

12. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.
13. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.



J. Michael Taylor
VP, Laboratory General Manager
Lionville Laboratory
gmb/ml1-346

01-05-01
Date



METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 00112346

Leaching Procedure: 1310 ☒ 1311 1312 Other: _____

CLP Metals Digestion and Analysis Methods: ILM03.0 ILM04.0

Metals Digestion Methods: 3005A ☒ 3010A 3015 3020A 3050B 3051 200.7 SS17
 Other: _____

Metals Analysis Methods

	SW846	EPA	STD MTD	EPA OSWR	USATHAMA
Aluminum	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Antimony	<u>6010B</u> <u>7041</u> ⁵	<u>200.7</u> <u>204.2</u>			<u>99</u>
Arsenic	<u>6010B</u> <u>7060A</u> ⁵	<u>200.7</u> <u>206.2</u>	<u>3113B</u>		<u>99</u>
Barium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Beryllium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Bismuth	<u>6010B</u> ¹	<u>200.7</u> ¹		<u>1620</u>	<u>99</u>
Boron	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Cadmium	<u>6010B</u> <u>7131A</u> ⁵	<u>200.7</u> <u>213.2</u>			<u>99</u>
Calcium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Chromium	<u>6010B</u> <u>7191</u> ⁵	<u>200.7</u> <u>218.2</u>			<u>SS17</u>
Cobalt	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Copper	<u>6010B</u> <u>7211</u> ⁵	<u>200.7</u> <u>220.2</u>			<u>99</u>
Iron	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Lead	<u>6010B</u> <u>7421</u> ⁵	<u>200.7</u> <u>239.2</u>	<u>3113B</u>		<u>99</u>
Lithium	<u>6010B</u> <u>7430</u> ⁴	<u>200.7</u>		<u>1620</u>	<u>99</u>
Magnesium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Manganese	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Mercury	<u>7470A</u> ³ <u>7471A</u> ³	<u>245.1</u> ³ <u>245.5</u> ²			<u>99</u>
Molybdenum	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Nickel	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Potassium	<u>6010B</u> <u>7610</u> ⁴	<u>200.7</u> <u>258.1</u> ⁴			<u>99</u>
Rare Earths	<u>6010B</u> ¹	<u>200.7</u> ¹		<u>1620</u>	<u>99</u>
Selenium	<u>6010B</u> <u>7740</u> ⁵	<u>200.7</u> <u>270.2</u>	<u>3113B</u>		<u>99</u>
Silicon	<u>6010B</u> ¹	<u>200.7</u>		<u>1620</u>	<u>99</u>
Silica	<u>6010B</u>	<u>200.7</u>		<u>1620</u>	<u>99</u>
Silver	<u>6010B</u> <u>7761</u> ⁵	<u>200.7</u> <u>272.2</u>			<u>99</u>
Sodium	<u>6010B</u> <u>7770</u> ⁴	<u>200.7</u> <u>273.1</u> ⁴			<u>99</u>
Strontium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Thallium	<u>6010B</u> <u>7841</u> ⁵	<u>200.7</u> <u>279.2</u> <u>200.9</u>			<u>99</u>
Tin	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Titanium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Uranium	<u>6010B</u> ¹	<u>200.7</u> ¹		<u>1620</u>	<u>99</u>
Vanadium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Zinc	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Zirconium	<u>6010B</u> ¹	<u>200.7</u> ¹		<u>1620</u>	<u>99</u>

Other: _____

Method: _____

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.

MS = Matrix Spike.

MSD = Matrix Spike Duplicate.

REP = Sample Replicate

LCS = Laboratory Control Sample.

NC = Not calculated.

ANALYTICAL METAL METHODS

1. Not included in the method element list.
2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).
3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).
4. Flame AA.
5. Graphite Furnace AA.

RFW 21-21L-033/N-10/96

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 01/04/01

CLIENT: TNUHANFORD B99-029 H1152

RECRA LOT #: 0011L346

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
*****	*****	*****	*****	*****	*****	*****
-003	B10V60	Silver, TCLP Leachate	2.5	u UG/L	2.5	1.0
		Arsenic, TCLP Leachate	36.9	UG/L	33.9	1.0
		Barium, TCLP Leachate	23.8	UG/L	3.0	1.0
		Beryllium, TCLP Leachate	0.60	u UG/L	0.60	1.0
		Cadmium, TCLP Leachate	3.9	UG/L	3.4	1.0
		Chromium, TCLP Leachate	2170	UG/L	4.9	1.0
		Nickel, TCLP Leachate	12.5	u UG/L	12.5	1.0
		Lead, TCLP Leachate	25.0	u UG/L	25.0	1.0
		Antimony, TCLP Leachate	17.0	u UG/L	17.0	1.0
		Selenium, TCLP Leachate	62.3	u UG/L	62.3	1.0
-004	B10V61	Silver, TCLP Leachate	2.5	u UG/L	2.5	1.0
		Arsenic, TCLP Leachate	33.9	u UG/L	33.9	1.0
		Barium, TCLP Leachate	39.4	UG/L	3.0	1.0
		Beryllium, TCLP Leachate	0.60	u UG/L	0.60	1.0
		Cadmium, TCLP Leachate	4.4	UG/L	3.4	1.0
		Chromium, TCLP Leachate	2240	UG/L	4.9	1.0
		Nickel, TCLP Leachate	12.5	u UG/L	12.5	1.0
		Lead, TCLP Leachate	25.0	u UG/L	25.0	1.0
		Antimony, TCLP Leachate	21.5	UG/L	17.0	1.0
		Selenium, TCLP Leachate	62.3	u UG/L	62.3	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 01/04/01

CLIENT: TNUHANFORD B99-029 H1152

RECRA LOT #: 0011L346

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
BLANK1	99L1822-MB1	Silver, TCLP Leachate	2.5	u UG/L	2.5	1.0
		Arsenic, TCLP Leachate	33.9	u UG/L	33.9	1.0
		Barium, TCLP Leachate	3.0	u UG/L	3.0	1.0
		Beryllium, TCLP Leachate	0.60	u UG/L	0.60	1.0
		Cadmium, TCLP Leachate	3.4	u UG/L	3.4	1.0
		Chromium, TCLP Leachate	4.9	u UG/L	4.9	1.0
		Nickel, TCLP Leachate	12.5	u UG/L	12.5	1.0
		Lead, TCLP Leachate	25.0	u UG/L	25.0	1.0
		Antimony, TCLP Leachate	17.0	u UG/L	17.0	1.0
		Selenium, TCLP Leachate	62.3	u UG/L	62.3	1.0
BLANK2	99L1822-MB2	Silver, TCLP Leachate	2.5	u UG/L	2.5	1.0
		Arsenic, TCLP Leachate	33.9	u UG/L	33.9	1.0
		Barium, TCLP Leachate	42.4	UG/L	3.0	1.0
		Beryllium, TCLP Leachate	0.60	u UG/L	0.60	1.0
		Cadmium, TCLP Leachate	3.4	u UG/L	3.4	1.0
		Chromium, TCLP Leachate	4.9	u UG/L	4.9	1.0
		Nickel, TCLP Leachate	12.5	u UG/L	12.5	1.0
		Lead, TCLP Leachate	25.0	u UG/L	25.0	1.0
		Antimony, TCLP Leachate	17.0	u UG/L	17.0	1.0
		Selenium, TCLP Leachate	62.3	u UG/L	62.3	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 01/04/01

CLIENT: TNUHANFORD B99-029 H1152

RECRA LOT #: 0011L346

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RBSULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
*****	*****	*****	*****	*****	*****	*****	*****
-003	B10V60	Silver, TCLP Leachate	3360	2.5 u	5000	67.2	1.0
		Arsenic, TCLP Leachate	5430	36.9	5000	107.9	1.0
		Barium, TCLP Leachate	98500	23.8	100000	98.4	1.0
		Beryllium, TCLP Leacha	905	0.60u	1000	90.5	1.0
		Cadmium, TCLP Leachate	1050	3.9	1000	104.1	1.0
		Chromium, TCLP Leachat	7360	2170	5000	103.6	1.0
		Nickel, TCLP Leachate	958	12.5 u	1000	95.8	1.0
		Lead, TCLP Leachate	5450	25.0 u	5000	109.0	1.0
		Antimony, TCLP Leachat	721	17.0 u	1000	72.1	1.0
		Selenium, TCLP Leachat	1080	62.3 u	1000	108.3	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 01/04/01

CLIENT: TNUHANFORD B99-029 H1152
WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 0011L346

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR (REP)
-003REP	B10V60	Silver, TCLP Leachate	2.5 u	2.5 u	NC	1.0
		Arsenic, TCLP Leachate	36.9	37.0	0.27	1.0
		Barium, TCLP Leachate	23.8	23.1	3.0	1.0
		Beryllium TCLP Leachate	0.60u	0.60u	NC	1.0
		Cadmium, TCLP Leachate	3.9	3.4 u	NC	1.0
		Chromium, TCLP Leachate	2170	2130	2.2	1.0
		Nickel, Leachate	12.5 u	12.5 u	NC	1.0
		Lead, TCLP Leachate	25.0 u	25.0 u	NC	1.0
		Antimony, Leachate	17.0 u	17.0 u	NC	1.0
		Selenium, TCLP Leachate	62.3 u	62.3 u	NC	1.0

7/15/01

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 01/04/01

CLIENT: TNUHANFORD B99-029 H1152

RECRA LOT #: 0011L346

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L1822-LC1	Silver, LCS	492	500	UG/L	98.5
		Arsenic, LCS	9380	10000	UG/L	93.8
		Barium, LCS	4950	5000	UG/L	99.0
		Beryllium, LCS	245	250	UG/L	98.1
		Cadmium, LCS	238	250	UG/L	95.2
		Chromium, LCS	476	500	UG/L	95.2
		Nickel, LCS	2010	2000	UG/L	100.7
		Lead, LCS	2380	2500	UG/L	95.4
		Antimony, LCS	2850	3000	UG/L	94.9
		Selenium, LCS	9380	10000	UG/L	93.8

0011 L 344

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client TNY-Hanford B99-029

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ

QC Spec Del Std TAT 30 day

Date Rec'd 11-21-00 Date Due 12-21-00

Account #

**MATRIX
CODES:**

S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum
Solids
DL - Drum
Liquids
L - EP/TCLP
Leachate
WI - Wipe
X - Other
F - Fish

Lab
in**Client ID/Description**

**Matrix
QC
Chosen
(✓)**

Maternal

Date Collected

Time
Collected

0624X

2520

RECRA LabNet Use Only

בדברך

Icona3

$$m + 0$$

100

BIOV60

102

B10Y61

hr2

BIOVUO trip of 001

 $\frac{1}{2}$

1111

Special Instructions: Sns B99-029

Run Matrix QC

DATE/REVISIONS:

* 1. See labchron
met (1) 2. As, Br, Cd, Cr, Pb, Se, Ag, Sb, Br, Ni

**Relinquished
by**

Received
by

Date _____

Three

Discrepancies Between
Samples Labels and
COC Record? Y or N

4235 7954 0717

RECRA LabNet Use Only

Samples were: ☒ Shipped or ☐ Hand Delivered

Airbill # _____

2) Ambient or Chilled ☒

3) Received in Good Condition ☒ or ☐ No

4) Labels Indicate Property Preserved ☒ or ☐ No

5) Received Within Holding Times

COC Tape was:

- 1) Present on Outer Package ☒ or N
- 2) Unbroken on Outer Package ☒ or N
- 3) Present on Sample ☒ or N
- 4) Unbroken on Sample ☒ or N

COC Record Present Upon Sample Rec't ☒ or N

Cooler Temp. 3.1 °C

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B99-029-62		Page 1 of 1				
Collector Johansen		Company Contact T Pickett		Telephone No. 373-4630		Project Coordinator TRENT, SJ		Price Code 9N Data Turnaround 45 Days				
Project Designation 100-KR-4 Pump & Treat - Resin Sampling		Sampling Location 100-KR-4		SAF No. B99-029		Air Quality <input type="checkbox"/>						
Ice Chest No. ERC 99-042		Field Logbook No. EL-1516		COA R10KR4C570		Method of Shipment Federal Express						
Shipped To FMA/RECRA 11/25 11-16-00		Offsite Property No. A 010031		Bill of Lading/Air Bill No. 423579540717								
POSSIBLE SAMPLE HAZARDS/REMARKS HISTORICAL DATA INDICATES SAMPLES ARE LESS THAN 2000 pci TOTAL ACTIVITY. NO TOTAL ACTIVITY REQUIRED Special Handling and/or Storage NONE		Preservation		None	None	None	None	Cool 4C	Cool 4C	None	None	
		Type of Container		aG	aG	aG	aG	aG	aG	aG	aG	aG
		No. of Container(s)		1	1	1	1	1	1	1	1	1
		Volume		60mL	60mL	125mL	250mL	250mL	250mL	250mL	500mL	
SAMPLE ANALYSIS		Isotopic Uranium		Strontium-89,90 -- Total Sr	Techonium-99	Plutonium-238	Semi-VOA - 8270A (TCL) (Bis(2-ethylhexyl) phthalate)	See item (1) in Special Instructions	IC: Anions - 100.0 (Nitrate)	See item (2) in Special Instructions		
Sample No.	Matrix *	Sample Date	Sample Time									
B10V60	OTHER SOLID	11-20-00	0905					X	X	X	X	
B10V61	OTHER SOLID	11-20-00	0920					X	X	X	X	
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *				
Relinquished By <i>[Signature]</i> Date/Time 11-20-00 12:00		Received By <i>[Signature]</i> Date/Time 11-20-00 12:00		SAMPLE ORIGINATED IN NON CONTROLLED RADIOLOGICAL AREA. <2000 PCU/G. NO TA REQUIRED FOR SHIPPING, BUT THE PROJECT STILL WANTS TO RUN A TA FOR PROJECT INFORMATION, PER JULIAN LARUNEZ. (1) VOA - 8260A (TCL) (Chloroform, Methylenechloride); VOA - 8260A (Add-On) (Trichloromonofluoromethane) (2) Metals by ICP (TCLP) - 1311/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Metals by ICP (TCLP) Add-on - 1311/6010 (Antimony, Beryllium, Nickel)				S=Soil SE=Sediment SO=Solid S=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other				
Relinquished By <i>[Signature]</i> Date/Time 11-21-00 10:15		Received By <i>[Signature]</i> Date/Time 11-21-00 10:15										
Relinquished By		Received By										
Relinquished By		Received By										
Relinquished By		Received By										
Relinquished By		Received By										
LABORATORY SECTION		Received By		Title				Date/Time				
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time				

Recra LabNet - Lionville Laboratory
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-029 H1152

DATE RECEIVED: 11/21/00

RFW LOT # :0011L346

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B10V60	001	SO	00LE1537	11/20/00	11/24/00	12/22/00
B10V60	001 MS	SO	00LE1537	11/20/00	11/24/00	12/22/00
B10V60	001 MSD	SO	00LE1537	11/20/00	11/24/00	12/22/00
B10V61	002	SO	00LE1537	11/20/00	11/24/00	12/22/00

LAB QC:

SBLKHR	MB1	S	00LE1537	N/A	11/24/00	12/21/00
SBLKHR	MB1 BS	S	00LE1537	N/A	11/24/00	12/21/00



Client: TNU-HANFORD B99-029
RFW #: 0011L346
SDG/SAF #: H1152/B99-029

W.O. #: 10985-001-001-9999-00
Date Received: 11-21-2000

SEMIVOLATILE

Two (2) solid samples were collected on 11-20-2000.

The samples and their associated QC samples were extracted on 11-24-2000 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270C for TCL Semivolatile target compound Bis(2-Ethylhexyl)phthalate on 12-21,22-2000.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

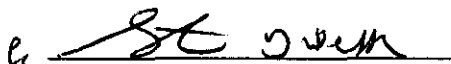
1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
2. The samples were extracted and analyzed within required holding times.
3. Four (4) of eighteen (18) surrogate recoveries were outside acceptance criteria. The surrogate recovery criteria were not met for the method blank and method blank spike; however, the problem was isolated to the method QC and all other surrogate recoveries were within criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

4. Two (2) of twelve (12) base/neutral matrix spike recoveries were outside EPA QC limits.

Four (4) of six (6) base/neutral blank spike recoveries were outside EPA QC limits.

The target compound is not included in the spiking solution. (CLP spike recoveries have been reported on the Form 3.)

5. The method blank contained the common laboratory contaminant Bis(2-Ethylhexyl)phthalate at a level less than 2x the CRQL.
6. All internal standard area and retention time criteria were met.
7. "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."


J. Michael Taylor
V.P./Laboratory General Manager
Lionville Laboratory

01-09-01
Date

son\group\data\bna\tnu-hanford-11-346.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 9 pages.

RECRA

Sample Discrepancy Report (SDR)

SDR #: 60MS404

Initiator: S Layman Batch: 0011L346 Parameter: BNA
Date: 12-26-00 Samples: _____ Matrix: Water
Client: TWO Man Rock Method: SW846/MCAWW/CLP Prep Batch: 00LE1537

1. Reason for SDR

- a. COC Discrepancy ☐ Tech Profile Error ☐ Client Request ☐ Sampler Error on C-O-C
☐ Transcription Error ☐ Wrong Test Code ☐ Other _____
- b. General Discrepancy
- | | | | |
|---|---|--|---|
| <input type="checkbox"/> Missing Sample/Extract | <input type="checkbox"/> Container Broken | <input type="checkbox"/> Wrong Sample Pulled | <input type="checkbox"/> Label ID's Illegible |
| <input type="checkbox"/> Hold Time Exceeded | <input type="checkbox"/> Insufficient Sample | <input type="checkbox"/> Preservation Wrong | <input type="checkbox"/> Received Past Hold |
| <input type="checkbox"/> Improper Bottle Type | <input type="checkbox"/> Not Amenable to Analysis | | |

Note: Verified by [Log-In] or [Prep Group] (circle) ...signature/date: _____

c. QC Problem (Include all relevant specific results; attach data if necessary)

BLK, BS - multiple spikes, surr recoveries low
MS, MSD - 1, 2, 4 - Trichlorobenzene recovery low
BLK - bis (2-Ethylhexyl) phthalate > CRCL (less than 5X CRCL)

2. Known or Probable Causes(s) (To be used for trend analysis)

- ☐ Lack of Organization ☐ Other (Please explain): _____
☐ Lack of Training
☐ Lack of Discipline
☐ Lack of Resources
☐ Lack of Time
☐ Lack of Management Support

3. Discussion and Proposed Action

- ☐ Re-log
☐ Entire Batch
☐ Following Samples: _____
☐ Re-leach
☐ Re-extract
☐ Re-digest
☐ Revise EDD
☐ Change Test Code to _____
☐ Place On/Take Off Hold (circle)

Other Description:

reanalyze - analysis is for the
late eluting compound bis(2-Ethylhexyl)phthalate
only, late eluting spike recoveries OK.
5 values only detected in samples

4. Project Manager Instructions ...signature/date: Robert Johnson 12/27/00

- ☐ Concur with Proposed Action
☐ Disagree with Proposed Action; See Instruction
☐ Include in Case Narrative
☐ Client Contacted:
Date/Person _____
☐ Add
☐ Cancel

5. Final Action ...signature/date: CS 1/8/00

Other Explanation:

- ☐ Verified re-[log][leach][extract][digest][analysis] (circle)
☒ Included in Case Narrative
☐ Hard Copy COC Revised
☐ Electronic COC Revised
☐ EDD Corrections Completed

When Final Action has been recorded, forward original to QA for distribution and filing.

Route/Distribution of SDR

- ☐ Initiator
☐ Lab Manager: M. Taylor
☐ Project Mgr: Stone/Carey/Johnson
☐ Section Mgr: Wesson/Daniels
☒ QA (file): Schrenkel
☐ Data Management: Feldman
☐ Sample Prep: Bickel/Kauffman

Route Distribution of Completed SDR

- ☐ Metals: Doughty
☐ Inorganic: Perrone
☐ GC/LC: Pastor
☐ MS: Layman/Rycklak
☐ Log-in: Keppel
☐ Admin: Soos
☐ Other: _____

GLOSSARY OF BNA DATA

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
BSD	=	Indicates blank spike duplicate.
MS	=	Indicates matrix spike.
MSD	=	Indicates matrix spike duplicate.
DL	=	Suffix added to sample number to indicate that results are from a diluted analysis.
NA	=	Not Applicable.
DF	=	Dilution Factor.
NR	=	Not Required.
SP, Z	=	Indicates Spiked Compound.



GLOSSARY OF BNA DATA

DATA QUALIFIERS

- U** = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J** = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D** = Identifies all compounds identified in an analysis at a secondary dilution factor.
- I** = Interference.
- NQ** = Result qualitatively confirmed but not able to quantify.
- A** = Indicates that a TIC is a suspected aldol-condensation product.
- N** = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- X** = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y** = Additional qualifiers used as required are explained in the case narrative.



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Page: 1a

*= Outside of EPA CLP QC limits.

3D
SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Recra.LabNet

Contract: 0985-01-01

Case No.: TNUHANFORD B99-029 H1152

RFW Lot No.: 0011L346-001

MATRIX Spike - Sample No.: B10V60

Level: (low/med) LOW

COMPOUND	SPIKE ADDED UG/KG	SAMPLE CONCENTRATION UG/KG	MS CONCENTRATION UG/KG	MS % REC #	QC LIMITS REC
1,4-Dichlorobenzene	1670	0	474	28	28 -104
N-Nitroso-Di-n-propylamine	1670	0	751	45	41 -126
1,2,4-Trichlorobenzene	1670	0	576	35 *	38 -107
Acenaphthene	1670	0	919	55	31 -137
2,4-Dinitrotoluene	1670	0	1130	68	28 -89
Pyrene	1670	0	1070	64	35 -142

COMPOUND	SPIKE ADDED UG/KG	MSD CONCENTRATION UG/KG	MSD % REC #	% RPD #	QC LIMITS RPD REC
1,4-Dichlorobenzene	1670	530	32	13	27 28 -104
N-Nitroso-Di-n-propylamine	1670	764	46	2	38 41 -126
1,2,4-Trichlorobenzene	1670	559	34 *	2	23 38 -107
Acenaphthene	1670	822	49	11	19 31 -137
2,4-Dinitrotoluene	1670	882	53	25	47 28 -89
Pyrene	1670	779	47	30	36 35 -142

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 6 outside limits

Spike Recovery: 2 out of 12 outside limits

COMMENTS:

3D
SOIL SEMIVOLATILE BLANK SPIKE RECOVERY

Lab Name: Recra.LabNet

Contract: 0985-01-01

Case No.: TNUHANFORD B99-029 H1152

RFW Lot No.: 0011L346

BLANK Spike - Sample No.: SBLKHRLE1537-MB1

Level: (low/med) LOW

COMPOUND	SPIKE	SAMPLE	BS	BS	QC	
	ADDED	CONCENTRATION	CONCENTRATION	%	LIMITS	
	UG/KG	UG/KG	UG/KG	REC #	REC	
1,4-Dichlorobenzene	1670	0	0	0 *	28	-104
N-Nitroso-Di-n-propylamine	1670	0	0	0 *	41	-126
1,2,4-Trichlorobenzene	1670	0	0	0 *	38	-107
Acenaphthene	1670	0	114	7 *	31	-137
2,4-Dinitrotoluene	1670	0	595	36	28	-89
Pyrene	1670	0	1020	61	35	-142

Column to be used to flag recovery value with an asterisk

* Values outside of QC limits

Spike Recovery: 4 out of 6 outside limits

COMMENTS:

RECRA LabNet Use Only
0011L 346

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS



Client TNY-Hanford B99-029
Est. Final Proj. Sampling Date _____
Project # 10985-001-001-9999-00
Project Contact/Phone # _____
RECRA Project Manager OJ
QC Spec Std Del Std TAT 30 day
Date Rec'd 11-21-00 Date Due 12-21-00
Account # _____

Refrigerator #	A		B		C		D	
#/Type Container	Liquid	Solid	Liquid	Solid	Liquid	Solid	Liquid	Solid
Volume								
Preservatives								
ANALYSES REQUESTED	ORGANIC				INORG			
	VOA	BNA	Pes/PCB	Herb	Metal	CN	Trace Metals	Leachates

MATRIX CODES: S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air DS - Drum DL - Drum L - EP/TCLP Leachate WI - Wipe X - Other F - Fish	Lab ID	Client ID/Description	Matrix QC Chosen (✓)		Matrix	Date Collected	Time Collected	RECRA LabNet Use Only											
			MS	MSD				ITCLP	IC003	met0									
	001	B10V60			30	11/20/00	0905	X	X										
	002	B10V61			1	1	0920	X	X										
	003	B10V60 tclp of 001			L	*	-												
	004	1 1 1 002			I	I	-												

Special Instructions: Saf B99-029

Run Matrix QC

DATE/REVISIONS:

* 1. See labchron
met0 2AS, Ba, Cd, Cr, Pb, Se, Ag, Sb, Br, Ni

Relinquished by	Received by	Date	Time
<u>Hand Ex</u>	<u>D. Fried</u>	<u>11/21/00</u>	<u>10:15</u>

Relinquished by	Received by	Date	Time
COMPOSITE		ORIGINAL	

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

4235 7954 0717

RECRA LabNet Use Only	
Samples were: 1) Shipped <u>✓</u> or Hand Delivered _____ Airbill # _____ 2) Ambient or <u>Chilled</u> 3) Received in Good Condition <u>Y</u> or N 4) Labels Indicate Properly Preserved <u>Y</u> or N 5) Received Within Holding Times <u>Y</u> or N	COC Tape was: 1) Present on Outer Package <u>Y</u> or N 2) Unbroken on Outer Package <u>Y</u> or N 3) Present on Sample <u>Y</u> or N 4) Unbroken on Sample <u>Y</u> or N COC Record Present Upon Sample Rec't <u>Y</u> or N Cooler Temp. <u>3.1</u> °C

Recra LabNet - Lionville Laboratory
 VOA ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD B99-029 H1152

DATE RECEIVED: 11/21/00

RFW LOT # :0011L346

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B10V60	001	SO	00LVH521	11/20/00	N/A	11/30/00
B10V60	001 R1	SO	00LVH521	11/20/00	N/A	11/30/00
B10V61	002	SO	00LVH521	11/20/00	N/A	11/30/00
B10V61	002 MS	SO	00LVH521	11/20/00	N/A	11/30/00
B10V61	002 MSD	SO	00LVH521	11/20/00	N/A	11/30/00

LAB QC:

VBLKDD	MB1	S	00LVH521	N/A	N/A	11/30/00
VBLKDD	MB1 BS	S	00LVH521	N/A	N/A	11/30/00



**Recra LabNet Philadelphia
Analytical Report****Client:** TNU-HANFORD B99-029**RFW #:** 0011L346**SDG/SAF #:** H1152/B99-029**W.O. #:** 10985-001-001-9999-00**Date Received:** 11-21-2000**GC/MS VOLATILE**

Two (2) solid samples were collected on 11-20-2000.

The samples and their associated QC samples were analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8260A for client specified Volatile target compounds on 11-30-2000.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
2. The samples were analyzed within required holding time.
3. Seven (7) of twenty-one (21) surrogate recoveries were outside EPA QC limits. The analysis of associated matrix spike samples fulfills the reanalysis requirement of sample B10V61. Sample B10V60 was reanalyzed on 11-30-2000 and reported.
4. One (1) of ten (10) matrix spike recoveries was outside EPA QC limits.

All blank spike recoveries were within EPA QC limits.

The target compounds are not included in the spiking solution. (CLP spike recoveries have been reported on the Form 3.)

5. The method blank contained the common laboratory contaminant Methylene Chloride at a level less than 2x the CRQL.
6. Internal standard area criteria were not met the samples. The analysis of associated matrix spike samples fulfills the reanalysis requirement of sample B10V61. Sample B10V60 was reanalyzed on 11-30-2000 and reported.
7. "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."


/ J. Michael Taylor

V.P./Laboratory General Manager
Lionville Laboratory

01-11-01
Date

som\group\data\voa\tnu-hanford-11-346.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 9 pages.

GLOSSARY OF VOA DATA

DATA QUALIFIERS

- U** - Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J** - Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** - This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E** - Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D** = Identifies all compounds identified in an analysis at a secondary dilution factor.
- I** - Interference.
- NQ** - Result qualitatively confirmed but not able to quantify.
- N** = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- X** - This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y** - Additional qualifiers used as required are explained in the case narrative.



GLOSSARY OF VOA DATA

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
BSD	=	Indicates blank spike duplicate.
MS	=	Indicates matrix spike.
MSD	=	Indicates matrix spike duplicate.
DL	=	Suffix added to sample number to indicate that results are from a diluted analysis.
NA	=	Not Applicable.
DF	=	Dilution Factor.
NR	=	Not Required.
SP, Z	=	Indicates Spiked Compound.



Volatiles By GC/MS, Special List

RFW Batch Number: 0011L346

Client: **TNUHANFORD B99-029 H1152** Work Order: 10985001001 Page: 1a

Cust ID: VBLKDD BS

Sample		RFW#:	00LVH521-MB1
Information		Matrix:	SOIL
		D.F.:	1.00
		Units:	UG/KG
<hr/>			
	1,2-Dichloroethane-d4	97	%
Surrogate	Toluene-d8	96	%
Recovery	Bromofluorobenzene	83	%
=====fl=====fl=====fl=====fl=====fl=====fl=====fl			
	Trichlorofluoromethane_____	5	U
	Methylene Chloride_____	14	B
	Chloroform	5	U

*= Outside of EPA CLP QC limits.

SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Recra.LabNet.Philadelphia Contract: 10985-001-001-9999-00

Lab Code: RECRA Case No.: SAS No.: SDG No.: 11L346

Matrix Spike - EPA Sample No.: B10V61 Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC. LIMITS REC.
=====	=====	=====	=====	=====	=====
1,1-Dichloroethene	110.79	0.0000	112.38	101	59-172
Trichloroethene	110.79	0.0000	100.20	90	62-137
Benzene	110.79	0.0000	104.73	94	66-142
Toluene	110.79	0.0000	142.02	128	59-139
Chlorobenzene	110.79	0.0000	97.950	88	60-133

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS	
=====	=====	=====	=====	=====	=====	=====
1,1-Dichloroethene	110.79	116.22	105	4	22	59-172
Trichloroethene	110.79	103.38	93	3	24	62-137
Benzene	110.79	108.96	98	4	21	66-142
Toluene	110.79	160.94	145*	12	21	59-139
Chlorobenzene	110.79	104.38	94	6	21	60-133

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits

Spike Recovery: 1 out of 10 outside limits

COMMENTS:

3B
SOIL VOLATILE BLANK SPIKE RECOVERY

Lab Name: Recra.LabNet.Philadelphia Contract: 10985-001-001-9999-00

Lab Code: RECRA Case No.: SAS No.: SDG No.: 11L346

Matrix Spike - EPA Sample No.: VBLKDD Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	BLANK CONCENTRATION (ug/Kg)	BS CONCENTRATION (ug/Kg)	BS % REC #	QC. LIMITS REC.
=====	=====	=====	=====	=====	=====
1,1-Dichloroethene	50.000	0.0000	47.353	95	59-172
Trichloroethene	50.000	0.0000	49.190	98	62-137
Benzene	50.000	0.0000	48.358	97	66-142
Toluene	50.000	0.0000	47.912	96	59-139
Chlorobenzene	50.000	0.0000	48.894	98	60-133

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 5 outside limits

COMMENTS:

RECRA LabNet Use Only

0011L 346

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS



Client TNU-Hanford B99-029

Est. Final Proj. Sampling Date _____

Project # 10985-001-001-9999-00

Project Contact/Phone # _____

RECRA Project Manager OJ

QC Spec Del Std TAT 30 day

Date Rec'd 11-21-00 Date Due 12-21-00

Account # _____

Refrigerator # 1 5

#/Type Container

Volume

Preservatives

ANALYSES REQUESTED

ORGANIC

INORG

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓)		Matrix	Date Collected	Time Collected	RECRA LabNet Use Only											
			MS	MSD				VOA	BNA	Pest/PCB	Herb	ILP Metal	CN	HC	Onions	1c	arches		
S - Soil	001	B10V60			30	11/20/00	0905	X	X					X		X			
SE - Sediment	002	B10V61			1	1	0920	X	X					X		X			
SO - Solid	003	B10V60			L	*	-												
SL - Sludge	004	1 1 1 002			I	I	-												
W - Water																			
O - Oil																			
A - Air																			
DS - Drum Solids																			
DL - Drum Liquids																			
L - EP/TCLP Leachate																			
WI - Wipe																			
X - Other																			
F - Fish																			

Special Instructions: Saf B99-029

Run Matrix QC

DATE/REVISIONS:

* 1. See labchron

me + (1) 2AS, Ba, Cd, Cr, Pb, Se, Ag, Sb, Be, Ni

3. _____

4. _____

5. _____

6. _____

RECRA LabNet Use Only

Samples were:

1) Shipped ☒ or Hand Delivered _____

Airbill # _____

2) Ambient or Chilled ☒

3) Received in Good Condition ☒ or N

4) Labels Indicate Property Preserved ☒ or N

5) Received Within Holding Times ☒ or N

COC Tape was:

1) Present on Outer Package ☒ or N

2) Unbroken on Outer Package ☒ or N

3) Present on Sample ☒ or N

4) Unbroken on Sample ☒ or N

COC Record Present Upon Sample Rec't ☒ or N

Cooler Temp. 3.1 °C

Relinquished by	Received by	Date	Time
<u>Henderson</u>	<u>D. Friedman</u>	<u>11/21/00</u>	<u>10:15</u>

Relinquished by	Received by	Date	Time

COMPOSITE WASTE

ORIGINAL REWRITTEN

Discrepancies Between Samples Labels and COC Record? Y or ☒ N

NOTES:

4235 7954 0717

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						B99-029-62		Page 1 of 1							
Collector Johansen		Company Contact T Pickett		Telephone No. 373-4630		Project Coordinator TRENT, SJ		Price Code 9N		Data Turnaround 45 Days							
Project Designation 100-KR-4 Pump & Treat - Resin Sampling		Sampling Location 100-KR-4		SAF No. B99-029		Air Quality <input type="checkbox"/>											
Ice Chest No. ERC 99-042		Field Logbook No. EL-1516		COA R10KR4C570		Method of Shipment Federal Express											
Shipped To TMA/RECRA 11-16-00		Offsite Property No. A 010031		Bill of Lading/Air Bill No. 423579540717													
POSSIBLE SAMPLE HAZARDS/REMARKS HISTORICAL DATA INDICATES SAMPLES ARE LESS THAN 2000 pci TOTAL ACTIVITY. NO TOTAL ACTIVITY REQUIRED Special Handling and/or Storage NONE				Preservation		None	None	None	None	Cool 4C	Cool 4C	None	None				
				Type of Container		aG	aG	aG	aG	aG	aG	aG	aG				
				No. of Container(s)		1	1	1	1	1	1	1					
				Volume		60mL	60mL	60mL	125mL	250mL	250mL	250mL	500mL				
SAMPLE ANALYSIS				Isotopic Uranium	Strontium-89,90 - Total Sr	Tritium - H3	Semi-VOA - 8270A (TCL) [Bis(2-ethylhexyl) phthalate]	See item (1) in Special Instructions.	IC Anions - 300.0 [Nitrate]	See item (2) in Special Instructions.							
Sample No.	Matrix *	Sample Date	Sample Time														
B10V60	OTHER SOLID	11-20-00	0905				X	X	X	X	97710						
B10V61	OTHER SOLID	11-20-00	0920				X	X	X	X	97724						
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS						Matrix * S=Soil SE=Settlement SO=Solid S=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Time W=Wipe L=Liquid V=Vegetation X=Other							
Relinquished By [Signature] 11-20-00 12:00		Received By FED EX 11-20-00 12:00		SAMPLE ORIGINATED IN NON CONTROLLED RADIOLOGICAL AREA. <2000 PCI/G. NO TA REQUIRED FOR SHIPPING, BUT THE PROJECT STILL WANTS TO RUN A TA FOR PROJECT INFORMATION, PER JULIAN LARUNEZ. (1) VOA - 8260A (TCL) [Chloroform, Methylenechloride]; VOA - 8260A (Add-On) [Trichloromonofluoromethane] (2) Metals by ICP (TCLP) - 1311/6010 [Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver]; Metals by ICP (TCLP) Add-on - 1311/6010 [Antimony, Beryllium, Nickel]													
Relinquished By [Signature] 11-21-00 10:15		Received By [Signature] 11-21-00 10:15															
Relinquished By		Received By															
Relinquished By		Received By															
Relinquished By		Received By															
LABORATORY SECTION				Received By						Title		Date/Time					
FINAL SAMPLE DISPOSITION				Disposal Method						Disposed By						Date/Time	